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CASES OF SQUINT AND ESOPHORIA, DUE TO ANISOMETROPIA, CURED BY GLASSES.

By Samuel Theobald, M. D.

Ophthalmic and Aural Surgeon to the Johns Hopkins Hospital and Dispensary.

A Paper read before the Johns Hopkins Hospital Medical Society, December 16, 1889.

The cases of concomitant squint which may be cured by means of glasses are, comparatively speaking, rare, and bear but a small proportion to those which can be corrected only by operative treatment. In my experience, they belong almost always to one of two classes—either they are squints which are not yet fully formed, being intermittent in character, occurring only during tension of accommodation, or they are squints that usually have been long established, but which—owing, probably, to a decline in the relative strength of internal or external recti muscles, as the case may be—have already shown a tendency to lessen in extent. The existence of anisometropia of considerable degree may also be regarded as a circumstance favorable to the non-operative correction of squint, because, as I have heretofore pointed out,[1] the squinting eye under such circumstances is less apt to become amblyopic than when the refraction of the two eyes is the same, since the necessarily indistinct image which its retina receives gives rise to less confusion, and is, therefore, not so apt to be mentally suppressed. The not-infrequent habit of anisometropic individuals of using one eye in near and the other in distant vision, also tends to a like result. But, besides this, a new and powerful stimulus to binocular fixation is supplied when, by the aid of glasses, images of equal distinctness are projected upon both retinæ. In the three following cases the good results which followed so promptly upon the adjustment of glasses must be ascribed in a great measure, I think, to this latter agency.

Case I.—Miss W., aged about 30, complaining of persistent asthenopia, exhibited in distant vision a slight convergent squint of the right eye, which defect had been observed for some years. In near vision, however, she was found to depend entirely upon the right eye, holding the page, in reading, at a very short distance. With this eye she could read J. No. 1, easily, but could do so with the left eye only by a considerable effort. Upon examination, compound hypermetropic astigmatism, against the rule, was found to be present in the left eye; compound myopic astigmatism, against the rule, in the right eye.

For distant vision glasses, which fully corrected the total defect of each eye, were prescribed, as follows:

Left eye $+\frac{1}{24}$ s $= -\frac{1}{14}$ c ax. 90°.

Right eye $-\frac{1}{15}$ s $= -\frac{1}{24}$ c ax. 95°.

For near vision the myopia of the right eye was only partially corrected, and the hypermetropia of the left eye sufficiently over-corrected to make the far point of each the same. These gave at once binocular fixation in near vision; but, in distant vision the fixation was still only with the left eye, the right, as before, squinting slightly inward. The glasses, however, were worn systematically, and within a few weeks the squint had entirely disappeared, and careful testing, at this time, and six months later, showed binocular fixation in distant, as well as in near vision.

Case II.—Mrs. M., aged 42, had a very decided divergent squint of the left eye. In distant vision it was of high grade, in near vision, variable in degree, occasionally disappearing entirely, so that she would, at times, obtain momentary binocular fixation. In the non-squinting, right eye a simple myopic astigmatism was discovered, requiring for its correction $-\frac{1}{14}$ c ax. 80°; in the left eye, a simple hypermetropic astigmatism, corrected by $+\frac{1}{12}$ c ax. 40°. As she was not able to fuse the retinal images of a light placed at a distance of 20′ until prisms amounting in the aggregate to 52° (bases in) had been placed before the eyes, I had little hope that binocular vision for distance would be restored without a tenotomy of the external rectus of one or both eyes and still less that, if restored, it would be unattended by muscular asthenopia. However, as she was averse to an operation, if it could possibly be avoided, and as the tests for muscular insufficiency gave, for the reading distance, most contradictory results, I simply prescribed the lenses which I have mentioned, directing that they be tried for near as well as for distant vision, my expectation being that in near vision they would probably restore binocular fixation, while in distant vision they would simply correct the astigmatism of the fixing eye, and thus relieve the asthenopic symptoms. To my surprise, when the patient reported a week later, after having worn the glasses but four or five days, I found that with them she had binocular fixation both in distant and near vision, and, what was more surprising still, was, in distant vision, entirely free from asthenopia. Two months later this condition was main-

[1] The amblyopia of squinting eyes: Is it a determining cause or a consequence of the squint? Transactions of the American Ophthalmological Society, 1886, and the Medical News, September 4th, 1886.

tained, and she reported the glasses as very satisfactory in distant, but not so comfortable in near vision. I then prescribed for reading and sewing the same cylinders which I had previously ordered, combined with $+\frac{1}{36}$ s, and these gave her entire satisfaction.

Case III.—Dr. M., aged about 30, engaged in teaching, applied to me because of troublesome asthenopia. He was found to have compound myopic astigmatism in each eye with well-marked anisometropia, the astigmatism being of low grade and equal in the two eyes, the myopia being nearly three times as great in one eye as in the other. The Graefe test, with the ametropia uncorrected, showed esophoria, or insufficiency of the external recti muscles, at 20′ of 5°; with the myopia and astigmatism corrected this was increased to $6\frac{1}{2}°$. There was also left hyperphoria of 1° to $1\frac{1}{2}°$. Although there was no squint and evidently binocular fixation, he depended chiefly upon his less myopic, left eye, in both distant and near vision, using his accommodation so as to obtain in it the distinct retinal image. Glasses, for constant use, were prescribed as follows:

Left eye $-\frac{1}{72}$ s $=-\frac{1}{14}$ c ax. 135° = Prism 2° base out.
Right eye $-\frac{1}{36}$ s $=-\frac{1}{14}$ c ax. 45°.

These gave $v=\frac{20}{xx}$ — and J. No. 1, and soon relieved his asthenopia.

The interest of the case, however, resides in the fact that an examination made after the glasses had been worn with satisfaction for five months, showed that the insufficiency of the externi had almost entirely disappeared. Indeed, the Graefe test, at 20′, with the ametropia corrected, at times gave no insufficiency whatever, though occasionally an esophoria of 1° to $1\frac{1}{2}°$ would manifest itself, the same test, under like conditions, having shown at the time the glasses were prescribed, as I have stated, $6\frac{1}{2}°$ of esophoria. The patient was then comfortable with his glasses, and I did not deem it wise to make any change in them; but I told him it might soon become necessary to take away the prism which had been placed before the left eye. Shortly after this he left the city to accept a position at Bowdoin College, Maine, and not long afterwards finding his eyes less comfortable he visited, at my suggestion, Dr. E. E. Holt, of Portland, who found the relative strength of the external recti muscles so changed as to induce him to reverse the position of the lens which I had given for the left eye, so as to place the base of the prism in; and, at last accounts, this change seemed to have been of advantage.

The following case is of interest only as showing how high a grade of esophoria may exist in exceptional instances without the development of squint, this feature of the case being the more remarkable in view of the fact that the eyes, as will be seen, were appreciably different in focus.

Case IV.—Mrs. L., aged 51, complained of headaches, asthenopia and poor vision. Both optic discs were found to be very hyperæmic, and well-marked choroid-retinal changes were discovered in the lower part of the fundus of each eye. She was using as reading glasses $+\frac{1}{12}$ s, but had never worn any glasses in distant vision. With the cover test the excluded eye squinted strongly inward in both distant and near fixation, but a rapid movement of correction followed as soon as the eye was uncovered. With the ametropia uncorrected (as in distant vision it always had been) the Graefe test showed at 20′ between 23° and 24° of esophoria, and at 13″, 12°. She was found to have compound hypermetropic astigmatism, against the rule, with anisometropia, and glasses were prescribed for distant vision as follows:

Left eye $+\frac{1}{7}$ s $=-\frac{1}{15}$ c ax. 90°.
Right eye $+\frac{1}{8}$ s $=-\frac{1}{24}$ c ax. 85°.

With these $v=\frac{20}{xx}$ was obtained, and the esophoria, with the test object at 20′, was reduced to 4°. For near vision, the same cylinders were combined with $+\frac{1}{5\frac{1}{2}}$ s for the left eye, and $+\frac{1}{6\frac{1}{2}}$ s for the right, which enabled her to read J. No. 1, with ease. When the patient was last seen a sufficient time had not elapsed to enable me to judge of the effect of the glasses, but they gave promise of affording the relief which I anticipated from them.

SALICYLIC ACID IN DERMATOLOGY.

By Robert B. Morison, M. D.

Dermatologist to the Johns Hopkins Hospital and Dispensary.

A Paper read before the Johns Hopkins Hospital Medical Society, December 16, 1889.

In Dunglison's Dictionary of 1868, salicylic acid is not mentioned though salicin is, and it is there recommended to be "like the quinia in medicinal efficacy."

In Thomas' Dictionary—1886—it is spoken of as being the "pharmacopœial name—U. S. 1880—for an acid originally obtained from the willow. It is now usually obtained from carbolic acid."

In Buck's Reference Handbook of Medicine—Vol. VI, 1888—a description of it is given but no mention made of its use in dermatology although its internal usefulness is conceded.

In the same publication, under Antiseptics in Surgery, Roswell Park says it has been used a great deal by Thiersch, of Leipzig, and "Volkmann has shown that in those cases where the discharges have a sour odor and sphæro-organisms are found under the microscope, the use of the acid checks all mischief and destroys the odor. Lister makes a cream or ointment of salicylic acid for application around the edge of other dressings where irritation has been set up." It is used on ulcerated surfaces, dusted on as a powder.

Sternberg[1] used this reagent, dissolved by means of sodium biborate which by itself has no germicidal power. A two per cent. solution was found to destroy a micrococcus from pus and B. *termo* in active growth. In an article by the same author is quoted the classification of Miquel which puts salicylic acid among "the substances very strongly antiseptic." Miquel considers the antiseptic powers of salicylic acid ten times that of salicylate of soda.

As long ago as 1855 Bertagini is said to have studied the physiological action of salicylic acid and in 1874 Kolbe, besides producing it synthetically, illustrated its antiseptic action. He obtained it from carbolic acid whereas it was originally obtained from the oil of wintergreen. The intricate and careful manipulation, which is necessary to make it pure from carbolic acid, may account for the very irritating properties which it exhibits where the preparation is not what it should be. There may be included according to some authorities, in the preparation of salicylic acid, a contamination with cresyl-salicylic acid, which must be removed to render the salicylic acid pure.

These statements regarding the acid are made because unsatisfactory results have been obtained by surgeons and dermatologists from the use of impure preparations. It would seem that in the use of this drug extraordinary care must be used to get it pure, for experience teaches that it is irritating enough without any impurities. Two prescriptions put up at different druggists have acted differently with me upon the same patient, one doing harm, the other at least doing none. It is very important to get the proper thing to start with.

The action of salicylic acid is principally upon the epidermis and epithelium. It removes the epidermis in large or small pieces, generally without any surrounding dermatitis. I say generally, because it is well known that the skin has its idiosyncrasies; to illustrate which I have only to call to your minds such diseases as urticaria, poisons from dyes, or pruritus. Thus we know that people's skins differ in their sensitiveness to surrounding influences and that among these idiosyncratic influences salicylic acid must be included. The epidermis underneath a strong plaster or well protected ointment, if it be of the strength of 38 or 50 per cent., becomes gradually white and soft. The acid deadens sensation so that intense itching is relieved and it partially dispels the soreness of a callositas or tylosis. It does not blister like strong bichloride of mercury or a mustard plaster.

The epidermis comes off easily leaving a reddened oozing surface for further treatment.

Is it out of place in this connection to call to your minds the fact that

[1] Ibid. Germicides.

when all the epidermis and epithelium of the skin are generally macerated, it leaves quite a different picture behind from that usually given in books on the histology of the skin. In fact a microscopic section does not give a true picture. The papillæ, which contain the vessels and nerves, are in reality so much more delicate and slender and project so much more sharply upwards than they are represented as doing, or as we imagine they normally do, it is perhaps no wonder we are surprised at the quantity of epithelium between them. When we think of the skin, the papillæ should be represented to the mind as a lot of carrots planted upside down, growing thus with no regularity and their tops receiving nourishment from the true soil beneath.

The action of the acid is quite different from that of a blister of any kind and I have as yet never seen any pigmentation follow its use, in fact I use it for the removal of freckles and other pigment spots instead of the bichloride of mercury or iodine.

Wherever tar was formerly used after the manner of Hebra salicylic acid may be applied with safety because it does not as often produce a violent or mild dermatitis. It is a better antiseptic and germicide than hyposulphite of soda and it acts more promptly on such diseases as tinea versicolor and ringworm. It is only slightly soluble in water but easily dissolved in alcohol. When an alcoholic saturated solution is applied a fine white powder remains after evaporation. It is in this form that I use it instead of applying the powder direct.

Pick, of Prague, first tried it extensively in dermatology and it was in his clinic I first saw it used. In 1882 I spent six months with him and observed the daily use of his salicylic acid gelatine. Going from Vienna, where tar was chiefly used in many diseases the salicylic acid treatment in Prague was, to use a German expression, "auffalland." Its cleanliness and want of odor were in strong contrast to the dirty looking blankets, beds and patients with the tar smell of the Vienna clinics.

I was soon convinced of the good results obtained from the salicylic acid and since then have only used tar preparations when there was a skin idiosyncrasy against it.

Unna has modified Pick's gelatine by adding glycerine in equal parts to the water which renders it more flexible. Salicylic acid does not dissolve in gelatine and glycerine and so it can be used in almost any desired quantity by mixing it in powder form.

Unna has also made salicylic acid plasters ranging from 5 to 50 per cent. in strength. These plasters have impervious rubber backs and stick well to the skin. They are very useful as I will show.

A few typical cases to illustrate these remarks will be sufficient.

Mr. J. L., aet. 45, healthy and active, consulted me for a chronic squamous eczema of both wrists, inner surface, with one spot on the right palm. Had worried over it, especially at night when warm in bed, for two years and had tried everything anybody had recommended as a cure-all or that various physicians had ordered. This is the usual history of a chronic eczema.

A 38 per cent. salicylic acid plaster was cut into the proper shape to cover a little more than the spots and a bandage tightly applied over the plaster and allowed to stay on twenty-four hours. Upon removal the epidermis was not much affected, so without washing, fresh plasters and bandages were applied to be kept on twenty-four hours more.

It is well to warn the patient he will suffer some pain. In this case he did not feel anything the first night but the second, pain was intense. Upon taking off the plaster the second time the epidermis was found whitened and soft so that by using the back of a knife it could be easily removed. As, however, the raw surface would be left to throb and burn it was better to leave the dead epidermis undisturbed, allowing it to fall off itself, which it did in a few days under the use of a 5 per cent. ointment of salicylic acid in lanolin. This ointment was rubbed in frequently and kept on by the use of gloves night and day until everything had healed—a matter of from a week to ten days.

To prevent a relapse a word of caution is necessary to such patients, and that is that they should always after using soap and water apply some lubricating ointment to the parts once affected. I prefer a 5 per cent. salicylic acid lanolin ointment.

The result in this case was excellent. It could not have been better.

In psoriasis of long standing, dating from two to thirty years, I have found salicylic acid very efficacious. There is no ruining of clothing or disfigurement of healthy skin or smell to it.

K., a German by birth, aet. 43, remembers when at school in Germany and not more than thirteen years old that he first was treated for the eruption he showed. It was a case of *psoriasis numalata et orbicularis* and was very disfiguring as there were large spots on either side of the nose and on the forehead. He was told to use *sapo viridis* and hot water to remove the scales and then to rub in a strong ointment of salicylic acid and lanolin ʒ i to ℥ i. He improved very much in a week and now, after four weeks, except for a slight discoloration which is gradually fading the spots are not noticeable. Those on the body are also disappearing.

Mr. R., aet. 17, consulted me for an eruption on his face and one arm. All the physicians whom he had consulted said it was ringworm and there was no doubt in my mind that they were right. It started on the left cheek as a small spot three months before. When I saw him there were nine spots on his face, neck and right arm of various sizes and very disfiguring. Many remedies had been tried so I determined on a new departure. Each of the spots was washed with *sapo viridis* and warm water for five minutes, dried and then covered with a solution bichloride mercury grs. xv ac. sal. ʒ i, collodion ℥ i. The pain was intense and some of the spots blistered slightly but no further treatment was necessary beyond an application of a 5 per cent. ointment of salicylic acid and lanolin. The patient gladly stood the pain for the good the treatment did him. This case would be classed in the almanacs as "Ringworm cured in one sitting."

From what my experience shows I hope I may therefore not be wrong in saying that salicylic acid plays an important role in dermatology.

THE USE OF FLUORESCEÏN AS A MEANS OF DIAGNOSING LESIONS OF THE CORNEA.

BY R. L. RANDOLPH, M. D.

Assistant Ophthalmic and Aural Surgeon to the Johns Hopkins Hospital and Dispensary.

A PAPER READ BEFORE THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY, MARCH 3, 1890.

In the November and December numbers of the *Centralblatt für praktische Augenheilkunde*[1] is to be found an article by Doctor Thomalla of Friedland, on coloring the cornea with fluoresceïn, as a means of diagnosing or detecting lesions of this portion of the eye. According to the author, Dr. Straub, a Netherland army surgeon first discovered the fact that a solution of fluoresceïn, when dropped upon a portion of the cornea which was deprived of its epithelium, would color this spot a deep green and leave the rest of the cornea unchanged.

For the past two months in the eye clinics of the Johns Hopkins Hospital and the Presbyterian Eye and Ear Charity Hospital, I have been testing the value of this method of diagnosing corneal lesions. The experiments number over a hundred and have led me to positive conclusions.

[1] Ueber die Färbung der Erkrankten Hornhaut mit Fluoresceïn und die Verwerthung dieser Färbung bei Stellung von Diagnosen und Differentialdiagnosen. Von Dr. Thomalla in Friedland, *Centralblatt f. prak. Augenheilk.*, November u. December, 1889.

Fluoresceïn is a red powder soluble in water and belongs to that class of subtances which are found as products of coal-tar distillation. I employ a solution of 10 grains of the powder to the ounce of water, to which is added 15 grains of the bicarbonate of soda.

I have never known the solution to have an irritating effect, and I have used it in the most intense forms of corneal inflammation. The portions of the cornea stained retain the color from half an hour to several hours. The solution produces not the slightest impression upon the healthy cornea. I have always found that when positive defects in the corneal epithelium existed, in other words where there was actual loss of substance the coloration was more apparent. So long, then, as it is possible to color any portion of the cornea, we may be certain that some lesion still exists. In excoriations of the cornea positive results were the rule. One case I remember particularly where the cornea had been scratched by a blow from a twig, and where the extent of the excoriation was scarcely visible to even oblique

illumination. Every detail of the wound and every minute point, where the epithelium had been removed, was clearly brought out by a drop of the fluoresceïn solution. In ulcers of the cornea positive results were always obtained. In simple superficial keratitis the coloration was much less distinct than when this disease was associated with an ulcer. In parenchymatous keratitis the results were invariably negative. In three cases of iritis uncomplicated with corneal trouble I failed to obtain any coloration. In two other cases of iritis of syphilitic origin where the cornea was involved, superficially as well as interstitially, marked coloration was observed. In two cases of acute glaucoma the result was absolutely negative.

In foreign bodies in the cornea no matter how small the foreign substance was, its position and size was located to a nicety. Here the coloration was immediate and distinct, showing itself by a green ring just around the foreign body. In phlyctens of the conjunctiva the color was rather yellow than green. Only in those cases where the phlycten was located on the limbus of the cornea and the latter had been involved to some extent, was there any positive green coloration to be seen. Pterygia and pinguiculae gave negative results. With the exception, then, of phlyctenular conjunctivitis, the solution is inapplicable to any of the other forms of conjunctival inflammation. As to the value of the solution as an aid in diagnosing such a disease as glaucoma, an interesting example of which Dr. Thomalla gives in his paper, I am unable to speak except from a negative point of view, as I have only experimented upon two cases. Whether in a series of cases of supposed acute glaucoma or where an attack of glaucoma is thought to be imminent, this solution will reveal disturbances in the cornea which so frequently attend this disease, and thus establish the diagnosis, I have very grave doubts. I have yet to see the cornea of an eye affected with acute glaucoma take on any coloring whatever. And furthermore, I have never observed any distinct coloring of the cornea, unless there exist some lesion or defect in the anterior epithelial layer. That cases of glaucoma do often occur where not only the anterior epithelium but the entire cornea is involved, is a well-known fact, and I am sure that such cases would take up the coloring matter. But it is quite evident that in this class of cases the solution would have no diagnostic value.

I think then that when one is accustomed to the use of the solution, in other words understands that where the coloration is produced the anterior epithelium is involved, the agent is of value in detecting, with accuracy, lesions of this part of the cornea. Ulcers so small that it is impossible to see them by diffuse daylight, are brought out with perfect distinctness, quite as clearly indeed as under oblique illumination, and I can readily believe that small points, which it is possible to overlook even with the oblique illumination, would invariably be revealed by a drop of the solution and, moreover, in half the time that it takes us to subject a patient to the former method. In minute ulcers of the cornea in very young children, where the blepharospasm and photophobia are frequently so intense that the lids have to be forced apart in order to get a view of the eye-ball, and then the latter is rolled about so continuously and the cornea flits so rapidly before our eyes, that we are obliged to simply infer from the attendant symptoms the nature of the trouble without actually seeing the lesion itself, a drop of the solution will locate the disease and its extent, and bring it out distinctly so that it can be seen, no matter how fast the eye-ball moves about. In such cases I am inclined to think that the fluoresceïn solution will be a help in establishing a diagnosis. I am using the solution every day and find it useful in bringing to light lesions of the cornea so small as to be readily overlooked in the hurry of a crowded clinic. Clinical experiments seem to show that positive results are only to be seen when there is some lesion or break in the anterior epithelium of the cornea. Troubles beneath the corneal surface give vague and hence unreliable results. Two of my colleagues on the staff of the Presbyterian Eye and Ear Hospital, Drs. Harlan and Woods, have been co-operating with me in trying the solution, and their views coincide entirely with mine.

I find in experiments on animals that if I simply rub the cornea gently with my fingers two or three times, enough epithelium is removed to show marked coloration on instillation of the fluoresceïn. This fact, no doubt, explains why slight insults to the eye-ball are attended with so much pain. However slight the mechanical force employed, a layer or two of epithelium has been removed, and hence the lachrymation, pain and all the symptoms of ciliary irritation. On scratching the cornea with a pin and dropping the solution upon the wound, the green coloration makes its appearance along the line of the scratch and from this line diffuses itself into the surrounding tissue. The deeper the scratch the further will the green color spread itself out into the cornea, and in some cases I have seen almost the entire cornea colored green. This tendency to diffusion of the coloring substance is far less marked if seen at all in inflammations involving the anterior epithelium. In ulcers, for example, it matters little how often the solution is dropped upon the ulcer, the green color remains at the seat of the ulcer, and shows no disposition to spread itself to remote parts of the cornea, and I think the reason is because around the margin of the ulcer all the entrances into the interlamellar canals and lacunae are blocked up or infiltrated with round cells and leucocytes, and hence a mechanical obstruction is offered to the passage of the fluoresceïn out into the healthy tissue. When a healthy cornea is scratched, many of these canals are cut across and the divided ends remain open, and into these openings passes the fluoresceïn solution just as water does into the interstices of a sponge.

If the solution of fluoresceïn be placed upon the cornea of a recently killed animal, a diffuse greenish color of the cornea is produced as soon as the corneal epithelium becomes loosened and macerated, a change which, as is well known, makes its appearance in a short time after death. This reaction then is an interesting test of the onset of these early post mortem changes in the corneal epithelium.

I have examined microscopical sections of the fresh corneae of animals which have been scratched or injured so as to bring out the characteristic color with fluoresceïn. It is necessary to examine these sections, which were made from the frozen cornea, without the addition of water or salt solution, as this rapidly extracts the color. In frozen sections of the injured cornea, colored before removal of the eye with fluoresceïn, it is observed that the color, which, by transmitted light, has a reddish hue, is diffuse and shows no especial affinity for definite histological elements in the living cornea such as the nuclei of the cells.

Commencing Tuesday, April 8th, at 8 p. m., and each Tuesday thereafter, Dr. JOHN S. BILLINGS, Surgeon U. S. Army and Director of the Hygienic Laboratory of the Johns Hopkins Hospital, will give a course of three informal lectures in the Reading Room of the Hospital on "Sewage Disposal." All persons interested in sanitary matters are invited to attend.

The *Annual Register of the Johns Hopkins University* for 1889–90 is in press and will be ready before the close of April. Copies of the Register may be obtained on application to the Registrar of the Johns Hopkins University.

No. 80 of the *Johns Hopkins University Circulars* is in press. This number is being issued under the editorial direction of Professor W. K. BROOKS, Director of the Marine Laboratory work of the University, and will contain a number of papers and notes on morphology, with illustrations.

Dr. R. L. Randolph, Assistant Ophthalmic and Aural Surgeon to the Johns Hopkins Hospital and Dispensary, has been appointed Ophthalmic and Aural Surgeon to the Baltimore and Ohio Railroad.

The *Description of the Johns Hopkins Hospital* prepared by Dr. JOHN S. BILLINGS, is now well advanced for publication. The volume will contain numerous plates with plans and detail drawings of all the Hospital buildings; also photographic views of the exterior of the buildings. It will give a careful and detailed description of the methods of heating and ventilating, plumbing and water supply; also the arrangements of the wards and service buildings and the mode of construction of the Hospital.

No. 3 of the *Johns Hopkins Hospital Reports* for 1890 is in preparation. Nos. 1 and 2 of the Reports are ready. Price, 50 cents each.

RECENT MEDICAL PUBLICATIONS.

Thanks are due to Messrs. B. Westermann & Co., of New York, for material furnished.

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PROCEEDINGS OF SOCIETIES.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Meeting of January 6th, 1890.

Dr. WELCH in the Chair. 34 members present.

Healing of Wounds under Moist Blood Scab.—Dr. HALSTED.

Dr. HALSTED exhibited three cases showing healing of wounds under a moist blood scab.

Mild Solutions of Corrosive Sublimate in the treatment of Keratitis.—Dr. RANDOLPH.

Dr. RANDOLPH said:

In looking over the various text books on diseases of the eye, I find scarcely any allusion made to the use of corrosive sublimate solutions in the treatment of corneal affections.

Schweigger gives it only a passing notice in his Handbuch and suggests its use in the strength of $\frac{1}{3500}$ in phlyctænular keratitis. My experience has been that when a solution of $\frac{1}{3500}$ is instilled into an eye affected with keratitis, the inflammation is in the majority of cases intensified, and that the use of a solution of this strength is almost invariably attended with considerable pain which persists for many minutes. I do not think, then, that solutions of this strength, in point of efficacy, are to be compared to other remedies employed in keratitis. Even in the strength of $\frac{1}{4000}$ to $\frac{1}{5000}$ patients not infrequently complain of the burning which attends every instillation of the solution.

The agent as a remedy in catarrhal affections of the conjunctiva has been used for years, but only when nothing better could be found, and from all I can learn on the subject it was regarded as an inferior remedy. I have used it in catarrhal conjunctivitis many times, and generally with indifferent results. In only one affection of the conjunctiva have I seen it active for good, and that was in that variety of phlyctænular conjunctivitis known as spring catarrh (Frühlingskatarrh). This disease, though, is a rare one, and especially so in this country, so I cannot speak further of its value here than to say that in the two cases of "spring catarrh" which I have seen in America, a solution of $\frac{1}{8000}$ of the bichloride of mercury did more good than all the other remedies employed.

As regards its use in trachoma I will only mention the fact that it has met with strong approval at the hands of the Italian ophthalmologists, who use it in the strength of $\frac{1}{100}$. It is generally recognized that trachoma is of microbic origin and, doubtless the success of the treatment with the mercury solution is due to the anti-microbic action of the latter, which action would clearly be an intense one in a solution of this strength. No doubt most of the diseases of the conjunctiva and cornea are of microbic origin, or at least these diseases are kept active and intensified by pathogenic germs which are known to exist in nearly half of the normal conjunctival cul-de-sacs, and which are present in the conjunctival cul-de-sacs of all eyes affected with keratitis. Dr. Gifford's experiments go to show that the staphylococcus aureus or albus of Rosenbach, in other words the ordinary pus organism, is present almost invariably in keratitis, and he leads me to think that it is the materia peccans. The investigations of Dr. Gifford, of Omaha, and Professor Gayet, of Bordeaux, demonstrate the impossibility of keeping aseptic for any length of time the conjunctival cul-de-sac; at the same time both investigators make it quite evident that anti-septic solutions do influence materially the action of the micro-organisms, either by lessening their numbers or their virulency. We are justified then in concluding that in treating corneal inflammations with antiseptic agents many of the pathogenic bacteria are killed, others rendered harmless, and others escape. Now the intensity of an inflammation, whose exciting cause is the pus organism, is largely influenced by the number of micrococci present. The agent then which most effectively destroys or lessens the number of these micrococci, and at the same time, possesses no property which would prove hurtful to the diseased parts, would fill, if not every requirement, certainly the most important ones in the treatment of keratitis. Long ago iodoform and boracic acid were common remedies in the treatment of corneal inflammations and no doubt the good results gotten in those days are to be attributed to the germicidal properties of these agents, though that was some years before the rise of the antiseptic era. Both these remedies I have frequently used in all forms of keratitis, and I am convinced of their comparative inferiority to the bichloride of mercury. As to this latter agent its position among antiseptics is too well known for me to discuss its comparative worth, and if we regard the presence of pathogenic organisms in keratitis as in any way responsible for the disease, it is evident that in the bichloride of mercury we have secured an agent more apt than any other agent to counteract the influence of the organisms. The solution I generally use is one of the strength of $\frac{1}{4000}$ or $\frac{1}{12000}$, sometimes $\frac{1}{16000}$, or, roughly speaking, $\frac{1}{4}$ gr. of the bichloride of mercury to the ounce of water. This is to be dropped into the affected eye every four hours.

I direct the patient to lie down and then gently depress the lower lid till it is free from the eyeball, the lower cul-de-sac exposed. The solution is then instilled upon the affected cornea, the cul-de-sac filled to overflowing. The patient is required to remain in the horizontal position and keep inundating the lower cul-de-sac for several minutes. In all forms of keratitis I can bear witness to the value of this method.

We have been using it at the Presbyterian Eye and Ear Hospital in this city for nearly two years and with gratifying success. In superficial keratitis this solution, in my opinion, has not a rival, and the same may be said of ulcers of the cornea, whether these ulcers involve the epithelial layers or the deeper structures of the substantia propria corneæ. In phlyctænular keratitis I have seldom seen it fail to do good, and the following case which occurred in the Johns Hopkins Hospital illustrates its rapid effect for good.

A. B., 14 years old, came into the Hospital for chills, was sent down into the eye department of the Dispensary to be treated for a small phlycten on the outer and upper border of the left cornea. The conjunctiva of the eyeball was much injected and there was a good deal of photophobia and lachrymation. I instilled a few drops of a one per cent. solution of atropia into the eye and gave him $\frac{1}{6000}$ solution of sublimate to be used every four hours.

I saw him two days afterward, the photophobia and lachrymation had gone, the phlycten had ruptured, discharged its contents and there was scarcely more than a slight redness at the corneo-scleral junction, to mark the spot where the phlycten had had its seat.

R. M., 7 years old, had suffered with phlyctænular keratitis for the past three years. Her family physician told me that he had tried the yellow oxide of mercury and solutions of atropia, combined with constitutional treatment, all with no effect. I gave her a solution of $\frac{1}{6000}$ bichloride of mercury, with 1 gr. of the sulphate of atropia in the same solution, to be used every four hours. In a week's time I directed her to use the solution containing the atropia once daily, and gave her a simple solution of sublimate $\frac{1}{6000}$ to be instilled every three or four hours into each eye. With the exception of the bichloride solution, the same remedies had been prescribed and kept up for a considerable time by the family physician. I may say that the cod liver oil and iodide of potash were kept up.

The introduction of this new factor in the shape of the sublimate solution seemed to supply a long felt want. In two weeks' time, from not being able to face the light on account of the intense photophobia, she could withstand the sun's rays with tolerable comfort, and one month later both corneæ, from being the seat of several small ulcers, had lost every sign of acute inflammation and only one or two cloudy points remained. The recovery was a complete one and both corneæ, with the exception of a small nebulous opacity on each, are clear.

Mrs. I., age 65. Pannus on both corneæ, resulting from chronic trachoma and consequent thereupon entropion. She could barely count fingers across the room and the blepharo-spasm was so intense that the lids had to be forced apart. She was given dark glasses, atropia was instilled into both eyes once daily, and the bichloride solution $\frac{1}{6000}$ every four hours. Both corneæ at this time were vascular over their entire upper half. In two weeks' time she could open the lids, face the light and count fingers across the room. It is now two months since I first saw her. In the right eye the vascularity has entirely disappeared. It is present still to a slight extent in the left eye. She reads with considerable comfort, of course entirely with her left eye. The granulations on the upper lid have disappeared. She is still using the solution three times daily.

It is not to be implied from the foregoing that I underrate the importance

of constitutional remedies in the treatment of corneal affections, for I always use such remedies, but I think that the local remedy is the factor in the treatment with whose agency we can least afford to dispense. I am not conscious of having suggested a new remedy, but only one in a new dress. As used hitherto in keratitis, the solution of the bichloride of mercury was too strong to do good, but strong enough to irritate and do harm, hence its unpopularity.

Nearly three years ago I first suggested to the senior surgeon of the Presbyterian Eye and Ear Hospital of this city, that such a solution be combined with atropia whenever the latter was used simply in order to make the atropia solution an antiseptic one. About this time we began to use the pure solution as a collyrium in nearly all external diseases of the eye and now it is a remedy we invariably use in all corneal affections, and I can safely say it is the most satisfactory of all the agents we possess. The fact that cases of keratitis do occur where mild solutions of corrosive sublimate do no good but rather harm, is not a strange fact, for to fail often is the history of our most valuable drugs. Only one such case has come under my observation, and it has not in the least influenced me in according to this remedy other than the highest place in the treatment of keratitis.

I will only add that I have read Dr. Geppert's[1] work containing the results of his experiments with sublimate solutions, and though they cast a reasonable doubt upon the correctness of the generally accepted notions of this agent as an antiseptic, still I am not prepared to believe that mild solutions of sublimate do not check the development of organisms present in the conjunctival cul-de-sac.

Dr. Geppert's experiments were made with the anthrax bacillus, an organism which, if not the most resistant, certainly ranks among those germs which withstand the longest the action of antiseptic agents. Though his work is opposed to Koch's he does not declare that sublimate solutions possess absolutely no antiseptic value. He simply disproves the accepted opinions of the value of corrosive sublimate as an antiseptic in solutions, *weaker* than 1:1000, and that too in the action of such solutions upon organisms possessing far greater powers of resistance than any of the organisms yet observed in external inflammations of the eye. Even if we conclude from Geppert's experiments that the sublimate solution simply inhibits the activity of the germs, such an influence is certainly a restraining one and is only a point in favor of using such a solution in the treatment of keratitis. I am quite willing to concede that sublimate solutions have, in addition to their antiseptic action, some local therapeutic effect, particularly in external diseases of the eye. My conclusions have been drawn from clinical observations. It is evident from the experiments of Geppert and of others that our ideas concerning the value of certain antiseptic substances must undergo revision.

Dr. ABBOTT said:

In the light of more recent observations, the confidence hitherto placed in mercuric chloride as a disinfectant, seems to be, to some extent, unwarranted. Though more improved technical methods demonstrate inaccuracies in results hitherto published upon this salt, yet the errors are not of sufficient gravity to seriously interfere with the usefulness of this substance in surgical practice.

Some short time since Geppert, in Bonn, published an article, entitled "Zur Lehre von den Antiseptisis" (*Berliner Klin. Woch.*, Nos. 36 and 37, 1889), in which he states that anthrax spores are not killed by an exposure of hours to mercuric chloride in 1:1000 solution. He questions the efficiency of the methods hitherto employed in these investigations, and believes the error to exist in the failure to remove all sublimate from the organisms before placing them upon the medium, which is to prove whether or not they have been killed.

He demonstrates the accuracy of this conjecture in two ways: First, before placing the organisms, which have been exposed to the sublimate upon the test medium, he precipitates and renders inactive all adherent sublimate by immersing them in a solution of ammonium sulphide [$(NH_4)_2S$]. By this means he has been able to demonstrate that anthrax spores may retain their vitality even after hours of exposure to 1:1000 sublimate solutions.

Second, he employs blood, instead of the ammonium sulphide. Here he obtains also an inert compound of albumen and mercury. Animals which had been inoculated with anthrax spores, which had been exposed to 1:1000 solution of sublimate, and then mixed with blood, died promptly of typical anthrax.

By this means he shows that anthrax spores, which had been exposed to 1:1000 solution of sublimate, for different lengths of time, and which, when tested in the ordinary way, were apparently killed, were in actuality not dead, but were inhibited and prevented from showing evidence of life when placed upon the test medium by this very small amount of still-active sublimate, which had adhered in transferring them from the disinfectant to the test medium.

Considering the results published by Koch, upon the substance, such impressive results called for confirmation or contradiction. During the past few weeks, it has been my pro ince to repeat a portion of this work of Geppert's, and in general my results agree with those reported in his publication.

Thus far my experiments, which I prefer to be accepted as only preliminary, justify me in saying that sublimate in 1:1000 solution, has not the disinfectant value hitherto given to it.

In a number of instances it has failed to kill anthrax spores after an exposure of one hour. It appears, likewise, under certain circumstances inefficient as a disinfectant for staphylococcus pyogenes aureus, even after an exposure of from ten to fifteen minutes.

In calling this work to your notice, I do not wish to leave the impression that the source of error referred to has escaped the attention of other workers in this field of research. All investigators of prominence, who have turned their attention in this direction, have endeavored by different means to eliminate it, but, as later experiments show, with doubtful success.

Koch, in his work, laid special stress upon the importance of freeing the organisms of every trace of sublimate before placing them upon the medium, which was to demonstrate whether or not they were still active. To this end he employed washing in alcohol and in water. His experiments upon animals corresponded throughout with those made by him on artificial media.

Sternberg, in the last report of the Committee on Disinfectants of the American Public Health Association, devotes several paragraphs to impressing the necessity for such precautions, and in his own work attempts to avoid the accident by dilution beyond the inhibiting point of the sublimate.

In closing I wish again to say that these experiments must be accepted as only preliminary. There are many factors which come into play in such work, all of which it is necessary to consider, and but few of which have as yet been investigated. I refer more especially to the differences in the activity of different preparations of sublimate; the degrees of activity in the presence of albumen; in non-albuminous material—its combination with other compounds, the degree of concentration of the solution, that is, the extent to which constant weights of the salt are dissolved, etc. In a short time I hope to report to this Society the results of a more prolonged series of investigation upon this subject, especially as to the activity of sublimate upon the pathogenic organisms of particular interest to the surgeon.

Fibroid Uterus—Carcinoma of Uterus—Fibro-Cystic Tumor of Uterus—Multilocular Ovarian Tumor.—Dr. KELLY.

Dr. KELLY exhibited specimens of fibroid uterus, carcinoma of uterus, fibro-cystic tumor of uterus, and multilocular ovarian tumor.

Thoracic Aneurism Presenting Unusual Symptoms.—Dr. LAFLEUR.

Dr. LAFLEUR reported a case of thoracic aneurism, and said:

The patient, a huckster by trade, was a man of 31 years of age, muscular and well-built. He had suffered from pain and weakness in the left arm for about three months. There had been some swelling of the arm and hand at first, but this had subsided. He had been short of breath for two months, and had had a dry cough for a week. There was no visible pulsating tumor, but a limited area of percussion dulness over the sternal end of the left clavicle and the first left intercostal space. In this situation there was a systolic murmur which was much intensified above the clavicle where a marked systolic thrill could be felt. The radial pulses were not synchronous, the left was weakened, and the sphygmographic tracings showed marked differences. There was some wasting of the muscles arising from the internal condyle of the left arm, the left forearm measuring eleven inches and the right 11¼ inches. The left wrist, however, measured half

[1] Zur Lehre von den Antiseptisis. Von Dr. J. Geppert. *Deutsche Med. Wochenschrift*, Nos. 36, 37, 1889.

an inch more than the right. The feature of special interest in the case was a marked clubbing of the fingers and incurvation of the nails of the left hand. This condition was probably due to pressure of the aneurismal sac upon the main venous trunk of the arm, and it was remarkable that under such circumstances there was no œdema or cyanosis of that extremity.

Filaria Sanguinis Hominis.—Dr. Osler.

Dr. Osler reported a case of *filaria sanguinis hominis*, and exhibited several specimens of the parasite under the microscope.

Perhaps the most interesting discovery in helminthology of late years, in this country, was by Dr. Guiteras, of the existence of the filaria associated with certain cases of chyluria, lymph scrotum and elephantiasis. His observations were made at Charleston and at Key West. Through the kindness of Dr. Dawson, of Charleston, we have had at the Hospital an opportunity of studying one of the cases referred to in the paper of Dr. Guiteras.[1] The following is a brief summary of his history:

He is a medium sized, well-nourished, healthy looking man, aged 47. His present illness dates from 1872, when one morning in November he passed urine of a milky color, and later in the same day blood. He was in bed for the greater part of three months after this, chiefly because the bloody urine came on whenever he got up and moved about. His health kept pretty good, and he did not lose flesh. These symptoms persisted for nearly six months, and afterwards he was entirely free for fifteen months. He gives an account of subsequent, slight attacks, and of a period of complete freedom for eight years, during which time he lived in the country and worked in the open air. For the past five years, he has again had attacks at intervals, for two or three days at a time, or for as long as a week. His general health has been good. He has not lost flesh. He suffers very little pain, and no special inconvenience from the disease, unless blood-clots form in the bladder, in which case he has pain and difficulty in micturition. A dragging, uneasy sensation in the right lumbar region at times worries him a good deal.

The patient is well-nourished. No œdema of feet or puffiness of eye-lids. There is atrophy of the right tibialis anticus. The vascular system is normal. The radial arteries are soft; tension normal. Examination of abdominal viscera negative. Just below the twelfth rib, on the right side, there is tenderness on deep pressure, but the kidney cannot be felt. The glands in the groins are, perhaps, a little large. Scrotum normal. Urine, whitish-yellow in color, turbid, acid in reaction; specific gravity 1016. On settling, there are two layers; at the bottom a sediment of blood, reddish in color, and above this a larger layer of turbid fluid, which, at the uppermost part, is slightly opalescent. The microscopical examination showed blood corpuscles and many fine molecular particles; no tube casts; no parasites. During his stay of five days in the Hospital, repeated examinations of the blood were made. During the day, the condition was practically negative. In the evening and through the night, in each slide of blood, the filarian embryos were found, presenting appearances and characters, now described in every text-book of medicine. In slides, surrounded with paraffin and kept at a moderate temperature, the embryos lived for days. A special note was made of this point, and it was found that in one instance the embryos were alive nine days after the withdrawal of the blood.

Dr. Osler called attention to the wide-spread distribution among animals of these filarian blood parasites, and to the very slight inconvenience which, as a rule, they cause their hosts. The same holds good with many cases of filariasis in man, and, as in the present instance, the condition may be consistent with vigorous health. There may be no external symptoms whatever, but when the worms lodge in, or cause obstruction of the pelvic or crural lymph-channels, lymph scrotum or elephantiasis may be produced. The association with hæmaturia and chyluria results when the renal and peritoneal lymph plexuses are affected. The plate of Dr. Mackenzie's paper (Pathological Society Transactions, 1881) was shown, in which a condition of enormous dilatation of these vessels was present. The adult worms, which are large and visible to the naked eye, live in the lymph vessels, and the embryos still within the chorionic membrane, pass into the circulation. The remarkable fact discovered by Manson, that they occur only in the blood at night, is confirmed by all subsequent observers. No very satisfactory explanation of this has been given, though it seems to be associated in some way with the condition of rest, as shown in Mackenzie's case. By reversing the habits, the parasites appeared in the blood during the day, when the man was at rest and asleep, and were absent at night, when he was up and about.

It is extraordinary, the length of time during which these parasites may occur in the blood. In the present case, the symptoms date back more than eighteen years, during which time the man has had prolonged intervals of freedom from any symptoms. We can scarcely suppose a fresh infection, and after all, this prolonged vitality of parasitic embryos, is by no means uncommon, as, for example, in the encysted trichinæ.

A question of interest is, whether all cases of hæmato-chyluria are parasitic. Undoubtedly some are not, and Dr. Osler referred to a very characteristic case occurring in Montreal, in which neither during life nor after death, were parasites discovered. He also spoke of a case of lymph scrotum from the south, which had been in the German Hospital, Philadelphia, and in which the embryos were neither in the lymph nor in the blood.

Dr. Atkinson had been much interested in the remarks of Dr. Osler. He had had several opportunities, some years ago, of treating patients with paroxysmal hæmaturia, the origin of which he then thought might be attributable to some parasite in the urinary tract. This, at the time, he had diligently searched for, but had failed to discover, but inclined to the opinion that it would eventually be detected in the urine of similar cases. His patients came from Princess Anne and Isle of Wight Counties, in Virginia, and one of them, an intelligent, medical student, was acquainted with four similar cases in his neighborhood, a highly malarious district. The patients had all given a malarial history, but the attacks of hæmaturia bore no direct relationship to those of malarial fever; indeed, malarial symptoms were usually absent throughout the attacks of hæmaturia, which sometimes persisted for many weeks, returning after indeterminate intervals. Usually, the urine upon arising would be comparatively free from blood, but would become very bloody after a day's exercise. The hæmaturia differed from that caused by the *Bilharzia hæmatobia*, in that it discolored the urine uniformly, while that, caused by this parasite, contains blood only toward the end of micturition. Indeed, the bleeding evidently proceeded from the upper portion of the urinary tract. The urine was acid, positively free from mucus and pus, although, in severe attacks, bladder epithelium was abundantly present. There were no tube casts. Careful search with low powers failed to reveal any parasite. Most unfortunately the blood was not drawn from the circulation for examination. The patients, though anæmic and pale, were able to attend to their daily avocations. They complained of general weakness, and a frequently recurring aching across the loins. One patient had had recurring attacks, lasting many weeks for four years, and informed Dr. Atkinson, that he was familiar with a case, similar to his own, of twenty years duration, the patient, though pale and not strong, enjoying fairly good general health. In none of the cases had there ever been chyluria or lymph scrotum. The occurrence of several similar cases, in persons living in one locality, had suggested to Dr. Atkinson, the possibility of their having a common origin in some parasitic invasion, and, though he had fruitlessly examined many specimens of urine, he inclined to the opinion, that under improved methods and closer investigation, the cause of such attacks will ultimately be recognized in some minute organism.

Dr. Hunter Robb, *Secretary*.

Meeting of January 20th, 1890.

Dr. Welch in the Chair. 26 members present.

A Case of Aphasia.—Charles E. Simon.

Mr. Simon read the following notes of a case of aphasia:

A couple of weeks ago a man applied at the neurological department for treatment, afflicted with a certain form of aphasia. The case seemed to be of such interest, that, with the consent of Dr. H. M. Thomas, I have decided to report it to-day.

The patient is Abraham Horwitz, 62 years of age, a native of Poland, married, and a peddler by trade.

He was always a healthy man, and never the subject of any severe illness. Four years ago, before the present trouble came on, he was worried considerably over the loss of the white garment, in which he, as a strict observer of the Mosaic law, was in the habit of saying his prayers; and at the present

[1] Medical News, 1886.

time he regards his disturbance of speech, as a direct punishment from above. The afternoon before he lost his speech he sustained another mental shock, but had recovered sufficiently in the evening, so as to be able to chat as usual with his family in quite a normal manner, apparently perfectly well. The next morning at six o'clock he woke up, and found himself entirely speechless, unable to utter a word. Greatly alarmed, and almost "out of his head," as his daughter puts it, he indicated his trouble by wild gestures.

During that day he remained in bed, being in no degree paralyzed. A physician was called, who ordered him to his office the next afternoon. He was there treated with electricity for some time, and gradually recovered his speech to a certain extent. During one of the first days, the patient was handed a bible, which he was able to read fluently, to the great astonishment of his family.

A few days after this attack had occurred, he began to complain of headaches, and intense giddiness, suddenly overtaking him on the street, and even now he is subject to such spells, the giddiness, however, worrying him a great deal more than his headaches, which latter are, in fact, quite trivial, and both disappear upon lying down.

Proceeding now to his present condition, leaving out of account a certain degree of excitability and irritability, which has become manifest in the course of his trouble, and which is probably explained by an inability to precisely express his wishes, his psychical condition is normal. Percussion on his head elicits no tender spots.

His eyes are freely movable in all directions, there being no nystagmus, and the pupils react to light, and upon accommodation. The sight is fair, although in reading he uses spectacles. The ophthalmoscopic examination is negative, and no hemianopia observable.

Hearing, taste and smell, roughly tested, are normal.

The muscles of the face are active, the tongue is protruded straight and freely movable. The uvula hangs perpendicularly, both sides of the soft palate are equally arched, and the pharyngeal reflex is present. No sensory disturbances could be made out.

The arms are freely movable, their muscular strength and sensation normal; the reflexes are not exaggerated.

The legs are also freely movable, the muscular strength and sensation normal; the knee jerk is present, and not exaggerated. There is no ankle clonus, and the patient's gait, although slow, is in no ways paretic.

There are no bladder or rectal disturbances, as far as could be learned.

Passing on now to a more detailed examination of his aphasia, it is apparent that the patient speaks with a great deal of embarrassment, short sentences being spoken without very much difficulty, but still in a hesitating and impulsive manner, but as soon as sentences are attempted, exceeding more than about ten words, these are left unfinished, a few isolated words, often entirely unintelligible, being expelled forcibly and abruptly, the patient appearing extremely distressed at his inability to express what he means or wants.

Thinking that this might possibly be due to a deficient knowledge of the only available language, *i. e.* German, I went to his daughter for information, finding that the same difficulty existed in his native tongue, and I should mention here also that all observations made upon him, were confirmed later on by tests in his own language. Long sentences, spoken to him in German, are but incompletely understood, but his own language he is said to understand perfectly. When asked why he cannot speak he says he knows the words, but forgets them as soon as he wants to put them into the form of sentences.

In all his speech another very interesting factor is brought out, namely, a want of power to arrange his words in grammatical sequence.

This point, however, is brought out best when his faculty of repeating is tested. Whenever single words are said before him, he can always correctly repeat these without any difficulty, so also when short sentences, not exceeding three or four words, are used; as soon, however, as he is asked to repeat a sentence exceeding this number, although he understands its meaning perfectly, the words come out entirely irrespective of grammatical sequence. Thus, when asked to repeat: "Ich bin in der Stadt gewesen und habe einen Freund gesehen," he puts it as follows: "Ich bin gekommen—gesehen—gesehen—Freund—."

When asked to write at dictation, he states that he cannot; upon close investigation, however, it is found that if dictated to sufficiently slowly, *i. e.* word for word, he can write without any appreciable difficulty, although he occasionally mistakes a *c* for a *d*, and an *a* for a *b*.

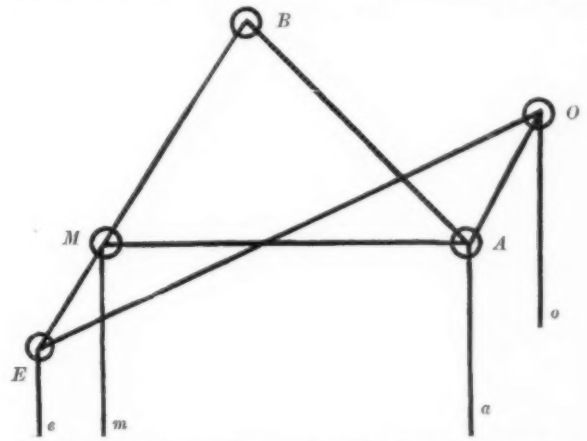
Volitional, or intelligent writing is greatly impaired and almost entirely lost; excepting the writing of his own name. His understanding of written or printed language is good, and, his daughter affirms, that, although unable to keep an account himself, he is able to look over an account, and point out errors made.

Reading aloud is quite normal, as is also his faculty of copying words.

When asked to name objects seen, this is done without much difficulty in the more familiar objects, but this faculty seems impaired to some extent in the case of the more uncommon ones; misnaming, however, does not occur.

The man's memory is good, and if asked to buy certain things, he attends to the matter properly.

In order to study more accurately the seat of the lesion in the case at hand, it will perhaps not be out of place to review, briefly, Lichtheim's view, as to the paths and centres concerned in speaking, reading and writing.



His scheme depends upon the manner in which the child acquires language by imitation, becoming possessed of "Wortklangsbilder," or auditory word impressions, and "Wortbewegungsbilder," or kinæsthetic word impressions. The places at which these then become fixed have been termed the centre of auditory images, and the centre of motor images respectively, and the reflex arc consists then in its simplest form in an afferent path aA, leading to the centre of auditory images, A; an efferent path mM starting at the centre of moter images M, and an intercentral tract AM. Of course, as soon as intelligence comes into play, the two centres mentioned, will become connected with a "Begriffs centrum," B in our diagram, by the paths AB and MB. According to this diagram then, seven different interruptions may occur in the paths described therein, and seven different types of aphasia, as it were, can exist.

Reading, on the other hand, necessitates the existence of a centre of visual memories of letters and groups of letters, which is, in all probability, connected with A, and which we will call O. In writing, the necessary movements have to be learnt and associated with visual representations, which is carried on through OE, E being the centre innervating the organs concerned in writing. For the existence of intelligent writing B must be connected with E, and clinical evidence goes to show that this path passes through M.

In attempting to bring the present case into one of the seven categories, it seemed to me that an interruption in the path BM, that is in the path connecting the "Begriffs centrum" with the centre of motor images, would give rise to the symptoms described above.

Since the patient understands everything that is told him the path aAB must be intact.

Considering the man's faculty of repeating now, a distinction must be made here between the repetition of single words and that of groups of words or entire sentences. In the former case the auditory impression being sufficiently strong, the impulse would be able to travel along the path $aA\,Mm$, and even radiate out to B; in the repetition of a sentence, on the other hand, the auditory impression will not be of sufficient strength, and a reconstruction will become necessary at B, and the path thrown into activity will really be that concerned in volitional speech. Recognizing the validity of such a distinction, the inability on the part of the man to repeat sentences, as well as his ability to repeat single words, is readily explained.

Taking up the faculty of writing to dictation, a similar division is necessary, and a lesion in *MB* will not be a serious obstacle, as long as dictation is carried on sufficiently slowly, which our case is able to do. The occasional mistakes that he makes I should explain by assuming that the word representations in the visual centre are incomplete, and that normally the path *BME* would be involved. The same holds for his faculty of copying words.

Volitional speech and volitional writing, of course, would be affected as they are.

Reading aloud, not involving the path *BM*, we should expect to be retained, as is also the case.

To sum up, then, we find that all the centrifugal impulses involving the "Begriffs centrum" are impeded in their course, the centripetal ones remaining intact.

Physiological Action of Antipyrin.—Chas. E. Simon, Aug. Hoch.

Mr. Hoch read abstracts from a paper prepared by himself and Mr. Simon, entitled: "Some Additions to the Knowledge of the Physiological Action of Antipyrin on the Nervous System."

While a great deal had been written about antipyrin from a clinical point of view, it was not until the winter of 1888–89 that the physiological action of the drug was thoroughly studied, and especially is this true concerning its action upon the nervous system. At that time the present work was begun upon suggestion of Prof. H. C. Wood, and carried on at the physiological department of the Johns Hopkins University, Prof. H. N. Martin kindly offering us facilities and revising the work done. Within the last year several articles have appeared, treating the same subject in a similar way, and some of the facts established by us can therefore only be considered as confirmatory.

In the experiments different animals were used, such as the cat, the dog, rabbit, fowl and frog, and the fatal dose with which we worked naturally varied considerably, being about gr. xxx in the cat, gr. xx–xxv in the rabbit, gr. x in the fowl, and the enormous dose of oz. iv–viii in the dog, full grown animals being used.

The symptoms produced in the various animals were in all cases quite similar, and a brief account of them, in the cat, for example, will not be out of place, before taking up the consideration of the drug's action upon the various nerves of the body, in which, of course, the main part of our work consisted.

After the administration of gr. xl to a full grown cat, marked salivation and lachrymation occurred almost immediately, lasting, as a rule, for about a quarter of an hour, and sometimes longer. The animal showed marked signs of distress by constant crying, and continuous attempts to seek some dark corner for the purpose of hiding. The gait soon became ataxic, beginning in the hind legs, and increasing until finally maintenance of the normal position became impossible, and the animal fell on one side.

Soon after this, a new stage, which we may call the convulsive stage, began, during which spontaneous convulsions, as well as artificially produced ones, occurred. It was easy to produce spasms of the entire animal by a light blow upon the table, a flash of light, clapping of the hands, etc., and if such stimuli were repeated sufficiently often, a general convulsion resulted, characterized by great rigidity of all the muscles of the body, and followed by clonic movements of the limbs with trismus. The pupils were widely dilated, and soon became insensible to light.

Respiration was greatly hurried, as was also the action of the heart, though this to a much less degree. The animal died, as a rule, during a convulsion, or from paralysis of the respiratory muscles. The heart continued to beat for as long as twenty minutes after respiration had ceased, and was finally arrested in diastole. All these symptoms occurred within an hour after administration of the dose.

In order to explain these symptoms, experiments were made upon the various nerves in the animals enumerated above.

To begin with the motor nerves, it was found that the action of the drug upon these was a paralyzing one, while the muscles retained their normal irritability. This was demonstrated on frogs' muscle nerve preparations, by allowing the drug to reach the muscle or the nerve only, when it was found that whenever the muscle had been placed in antipyrin, stimulation of the muscle only produced a contraction, while stimulation of the nerve was never followed by any response; if, on the other hand, the antipyrin was allowed to act only on the motor nerve, then stimulation of nerve and muscle both, was followed by a normal contraction.

This, therefore, points to an action of the drug upon the intramuscular portions of the motor nerves, and possibly their end plates.

Although these experiments no longer belong to the most accurate methods of investigation, still the fact that alternate exposure of the intra, and extra muscular portion of the nerve, for the same period of time, was followed by different results, speaks for their validity in the present case.

Again, if in an animal, after death from antipyrin, the sciatic was stimulated, and the nerve separated from the surrounding parts, so that the current could not readily reach the muscle along the moist parts below, then stimulation of the nerve was followed by no contraction, while the muscle itself readily responded upon irritation. The same was demonstrated in the case of the phrenic nerves.

There is also a time, late in the course of intoxication, when no movements of any kind can be elicited from the animal, the heart still acting, and artificial respiration having been kept up throughout the whole experiment, which we explain by paralysis of the motor nerves.

Upon the sensory nerves antipyrin was found to act as an anodyne, both when locally and internally administered. Clinically this effect has been known for a long time, and experimentally the same was noted. Thus if, for example, a circle of Müller was mapped out upon the arm, and antipyrin was locally applied, then such an area was remarkably increased in size, and especially in a longitudinal direction.

Similarly if the cuticle upon the arm was removed, and a concentrated solution of the drug rubbed in, the point of a scalpel could be plunged into the sore spot, causing absolutely no pain.

Control experiments with a saturated solution of common salt certainly demonstrated a decrease in sensibility, but not nearly as marked as in the case of the antipyrin.

Moreover it was found that at the beginning of the convulsive stage, the animal could be operated upon without the use of an anæsthetic.

We also have evidence that the other special senses are paralyzed, and before all others, the muscular sense.

Assuming that the ataxic phenomena in tabes are primarily due to a decrease in the sensibility of the muscular sense, and remembering that the ataxia is one of the earliest symptoms in antipyrin poisoning, in animals as well as man, several reported cases showing this, we infer that the muscular sense is the first to become abolished, as it is also the last to return; for if an animal, which has been given a dose, short of lethal, be left to itself, then the ataxia remains for several days after all other effects have already disappeared. The sense of sight is at first abnormally excited, flashes of light bringing on convulsions. This stage of hyperæsthesia, however, appears to be followed by a stage of total anæsthesia, the sense of touch and hearing being probably affected in the same way.

Upon the brain the drug acts as an excitant, the convulsions witnessed being due to a direct action on the brain, and probably on the motor cortex. That they are not spinal in origin can be shown by section of the cord, when they only occur in those parts, which remain in connection with the higher centres.

They are not asphyxial, for if artificial respiration be started before the drug is administered, or after, they appear nevertheless.

Section of the brain, however, the cut passing through the crura cerebri, will prevent the appearance of convulsions of any kind. We have satisfied ourselves about this action by many experiments, carefully excluding convulsions which were produced by the irritation of a clot after an operation not conducted with the necessary care, and which could be produced in the normal animal, if extensive clots were allowed to form at the base of the brain.

With reference to the convulsions produced by the drug, it should also be stated that the cerebral excitement was considerably lessened after the administration of ether, that is if the animal be kept under the influence of ether for some time, then during the time after its withdrawal it was occasionally impossible to cause any convulsions during the remainder of the experiment, spasmodic contraction being the result.

As to the reflex action on the spinal cord there was found first an increase followed later on by a decrease. This was shown on the frog and observed in the animals during the different experiments.

In some of the experiments on the action of the drug upon the brain where the crura cerebri were cut the temperature rose rapidly in a most extraordinary manner. Thus, in a dog in which the cut passed through the posterior portion of the crura, the temperature was found to be 110° Fahrenheit in the rectum and 112° were recorded in the abdominal cavity some time after death. Usually, however, a temperature of 105°–106° was noted under such circumstances.

This fact is of interest in many respects, especially in connection with a consideration of the well-known antipyretic action of the drug.

In the normal animal, antipyrin does not lower the bodily temperature, even if given in toxic doses, while this certainly does occur, to a marked extent, in the presence of fever. In the above cases high fever was observed and antipyrin had been administered in quite a large dose, why then did it not affect the temperature?

Certainly a probable action of the drug upon the thermal centres directly offers itself as a ready answer to the question; the thermal centres being thrown out of action in the above cases it could no longer exert its influence upon the tissues through the thermal nerves.

We certainly have reason to believe that heat-production or heat-regulation, or both, are under the control of a cerebral centre or centres.

In all cases of fever, in which the body-temperature is lowered by the drug, the following is the probable action: The abnormal constituents of the blood, whether they be products formed by the action of bacteria, or otherwise, or reflex causes, having their origin in an abnormal condition of the nerves leading to the thermal centres, act upon the latter, stimulating them, if they are heat producing, paralyzing, or, at least, lessening their irritability if heat-regulating, or both, if both exist. Antipyrin, on the other hand, if administered under such circumstances, and effecting a reduction in the temperature, must act exactly in an opposite manner, to result in a lowering of the temperature.

At the same time nitrogenous waste is decreased (as Samadowsky showed) by antipyrin in the normal as well as in the feverish animal, but that this decrease of waste is not due to an action of the drug upon the thermal centres, but upon the tissues themselves, is apparent from the fact that the temperature of the normal animal is not affected by it, however large the dose might be. This, then, explains the reason why antipyrin is such a powerful antipyretic since it acts on both the thermal centres and the tissues.

As we saw in the description of antipyrin poisoning, the number of respirations is increased, so that *e. g.* in one cat, poisoned with gr. xl of the drug, this amounted to 160 respirations per minute, and eight minutes later to 204, in another animal 250 respirations were recorded after the administration of a lethal dose. Later on this number decreased, not falling below the normal, however, until shortly before death.

In order to determine the cause of this extraordinary increase we had to differentiate between an action of the drug, upon the respiratory centre, and an action upon the vagus, the discharger of respiration, as Markwald calls it. Section of the vagi did not prevent this increase, in fact influenced it in no way, and a direct action upon the respiratory centre therefore suggested itself as the primary cause, for other possible secondary causes such as an increase in temperature, or an increased venosity of the blood, could readily be excluded by experiment. In the experiments also in which the crura cerebri were divided, a similar increase in frequency was observed. The decrease in the number of respirations, following, must be due to overstimulation of the centre, and the associated exhaustion, the vagi retaining their irritability up to the last, which could readily be shown by faradic stimulation, giving rise to the characteristic respiratory spasms. Toward the end, finally, respiration became quite spasmodic, and active expirations occurred. In this the increasing paralysis of the motor nerves must have coöperated with the exhausted condition of the respiratory centre. It may be of interest to state in this connection that in a reported case of antipyrin poisoning in man, Cheyne-Stokes' breathing was observed, and in the case of some of our animals its homologue, viz. periodic respiration, was noted.

As to the effects of antipyrin upon the circulatory apparatus it was found that the blood pressure is practically unaffected by the drug, a slight decrease in pressure only being noted toward the end.

The strength of the beats is somewhat lowered, and their number increased, amounting to about twenty to forty per minute. A section of the vagi influenced this increase in the number of beats but very slightly, and the result thus seems to be due to an action upon the accelerator nerves.

In all of our experiments the heart was arrested in diastole, unless the upper brain tracts were previously destroyed, when arrest in systole invariably occurred.

The styptic action of the drug is most marked, and has been ascribed by some to an action of the drug upon the vasomotor system. While this may be the case, it is certainly only a partial cause, since the antipyrin influences the clotting power of the drug in a most remarkable manner; thus in one case when 50 cc. of blood were allowed to flow into an aqueous solution of antipyrin, (gr. x in 10 cc.), a clot had formed one minute later already of such strength that the entire beaker could almost be inverted.

Chloralamid.—Dr. TOULMIN.

(See page 32, *Bulletin* for February).

Primary Tumor of Pancreas.—Dr. COUNCILMAN.

Dr. Councilman exhibited two specimens of carcinoma. The first, a primary carcinoma of the pancreas, with extensive involvement of the stomach, was found at a private autopsy. A full clinical history could not be obtained. The symptoms dated back eighteen months and were principally those of dyspepsia and obstinate constipation. There was no pain until six months before death, at which time a firm nodular mass could be felt in the abdominal cavity just below ribs and 8 cm. to left of median line. The position of the tumor with the chronic constipation, caused a diagnosis of carcinoma of the transverse colon to be made.

J. S., white, age 51. The body that of a large strongly-built man much emaciated. Subcutaneous fat almost absent, slight œdema of lower extremities. Heart normal. In both lungs extensive œdema, the lower lobe of right lung consolidated in the state of grey hepatization, the pleura over the consolidated lung covered with a fibrinous exudation. In the abdominal cavity about 200 cc. of clear serum slightly tinged with blood. Peritoneum smooth and glistening. The transverse colon adherent to an irregular tumor mass in the median line; to the left of this another large irregular mass beneath and rather below the transverse colon. Liver normal. Gall bladder distended and contained thick dark bile which could be squeezed with slight pressure into duodenum. On removal of the large tumor mass it was found principally composed of several large round masses lying in the small curvature of the stomach. These were very soft and gave almost the feeling of distinct fluctuation. On opening the stomach a large ulcerated surface with a rather firm base extending from 2 cm. above the pylorus towards the fundus a distance of 9 cm., and with an average breadth of 7 cm. In the ulcerated surface there were numerous sloughs, one of these projecting from a small cavity which extended into the tumor mass in the small curvature. The interior of this cavity was 3 cm. in diameter and covered with a foul grayish slough. The pancreas was extensively involved, only a short portion of the tail, 5 cm. in length, being left. The head of the organ taken by a large tumor mass which appeared also on the mucous membrane of the duodenum. The tumor to the left of the median line was found to be an irregular mass of retroperitoneal lymph-glands separated from the tumor in the median line and of the same soft fluctuating consistence. In the left kidney was a soft whitish tumor 1½ cm. in diameter. Microscopical examination showed all the tumors to be of the same character, carcinoma with large alveoli filled with polygonal cells containing much fat, showing that the tumor, in spite of the great involvement of the stomach, was a primary tumor of the pancreas.

The other case was a carcinoma of the colon from an autopsy made in the hospital. J. A., white, age 47, admitted to Hospital August 12. At the end of 1888 he had noticed a tumor about the size of a hen's egg on the left of neck just above the clavicle. This steadily increased in size and began to be painful so that in February, 1889, he stopped work and entered the University of Maryland Hospital, and remained under medical treatment about fourteen weeks Pain in the meantime had developed in the region of the liver. He left the hospital three weeks ago and applied to the Dispensary of the Johns Hopkins Hospital, when he was found to be suffering from pain, at times sharp, shooting, and at times dull and aching, referred to the site of the liver. On admission to this Hospital he was not well nourished; complexion sallow; expression anxious; bowels regular; micturition frequent; appetite fair; pulse full; increased dullness in abdomen, continuous with liver dulness. On August 13 an exploratory incision was made into the abdominal cavity by Dr. Halsted. A hard tumor was felt deeply seated, which was referred by the operator either to the head of the pancreas or to the retroperitoneal lymph-glands. Wound was closed without attempting anything further. Pain seemed relieved after the operation. Died August 16, 11 p. m.

Autopsy, August 17. Just above the left clavicle was a hard nodular swelling not adherent to the skin extending over an area 8 cm. long and 6 cm. broad and projecting about 2 cm. In the middle line of abdomen a linear incision 18 cm. long extending 4 cm. below the umbilicus. The edges of this incision firmly united. On separating the edge of this wound,

which could be done with some force, just above the umbilicus, thick, opaque, reddish-brown pus oozed up in this situation around the stitches. On opening the abdominal cavity the greatly distended stomach was found to occupy a vertical position with a sharp curve upward of the pyloric portion. Coils of intestine adjacent to the anterior abdominal wall were congested but there was no inflammation. The cavity contained very little fluid. A hard tumor could be felt in the region of the head of the pancreas—a cancerous hard mass of an irregular globular shape 6 cm. in diameter. Upon section it was like gristle and presented a greyish substance with opaque white dots and streaks. The tail of the pancreas was normal in appearance. The indurated mass in the head of the pancreas was intimately adherent to the colon in the ascending part near the hepatic flexure, which was likewise the seat of a cancerous growth. About 12 cm. above the valve there was an ulcerated growth in the ascending colon continuous with the growth in the pancreas. This growth surrounded the entire circumference of the gut and constricted the lumen which admitted readily but a single finger. The growth encircled the gut and measured 6 cm. in width. Its edges were overhanging and projected 6 mm. The surface was flat, irregular, ulcerated. All the coats of the intestine were involved in the growth which presented a greyish appearance with opaque whitish dots. The consistence was softer than that of the growth in the pancreas. The muscular coat near the growth on the side towards the valve was hypertrophied. The meso-colon attached to this part of the gut presented fibrous cicatricial patches, and there were adhesions between the displaced caecum and the adjacent colon. The retroperitoneal lymph-glands around the aorta were enlarged to the size of pigeon eggs, adherent, and on section presented a greyish appearance with opaque white cancerous masses. The lymphatic glands at the root of the neck on the left side and those behind the left sterno-clavicular articulation were enlarged, hard, agglutinated, forming an irregular projecting tumor the size of a fist, which on section presented a grey and white mottled, typical cancerous appearance. Cultures from peritoneal cavity showed no growth of bacteria.

Microscopical examination of the various tumors in this case showed a typical cylindrical cell carcinoma, indicating that the original tumor sprang from the colon and not from the pancreas. The case is further of interest in the metastasis in distant lymphatic glands, the infection most probably ascending along the thoracic duct. In neither case were there any metastases in the liver, the most common place for metastasis in all carcinomas of the abdominal viscera. Both cases are of interest as showing the impossibility of telling the primary seat of a tumor without careful microscopical examination.

Dr. Hunter Robb, *Secretary.*

NOTES ON NEW BOOKS.

Bacteriological Technology for Physicians. By Dr. C. J. Salomonsen. With 72 figures in the text. Authorized translation from the second revised Danish edition by William Trelease. Wood's Medical and Surgical Monographs, volume 4, number 2. (*New York, William Wood & Co.*, 1889).

This work is written by one of the pioneers and masters of modern bacteriological science. It was in 1876 that Salomonsen, by his capillary tube method, first succeeded in obtaining isolated colonies representing pure cultures of different species of bacteria occurring in putrefying blood. Although this method has now very limited application, its discovery entitles Salomonsen to be regarded as the first who separated a mixed putrefactive flora into its elements, and this was done by essentially the same principle which now forms the basis of our methods of obtaining pure cultures from a mixture of different species of bacteria. We regard it as a matter of historical justice to emphasize this fact which is so often overlooked in historical considerations concerning modern bacteriological development.

A good service has been done to English readers interested in bacteriology by the translation of Salomonsen's *Bacteriological Technology*. The work is intended, not only for those provided with the resources of a bacteriological laboratory, but especially as a guide to physicians and others who are obliged to undertake bacteriological studies with comparatively simple means. The technical directions given are clearly the outcome of practical familiarity with the best modern bacteriological technique on the part of the author. A noticeable and commendable feature throughout the work is an effort to simplify expensive and complicated apparatus and thus adapt it to the means of those who cannot afford costly apparatus. While the more perfect apparatus, such, for instance, as that employed in the Hygienic Institute in Berlin, is described, inexpensive and simple substitutes for Koch's hot-air sterilizer, steam sterilizer, incubator, etc., are also described and illustrated.

While the book does not aim at so comprehensive and exhaustive treatment of the subject as the last edition of Hueppe's *Methoden der Bakterienforschung*, there will, nevertheless, be found many useful and original suggestions not contained in the larger treatise. While the methods are chiefly those developed by Koch and his pupils, a somewhat larger utilization of many of the most valuable methods and apparatus of Pasteur and his followers is adopted than we are in the habit of finding in the German writings on this subject, and this feature is to be commended.

The descriptions of methods and apparatus are practical, concise, clear and elucidated by numerous figures and diagrams. The scope of the work, which numbers 160 pages, will be rendered clear by the enumeration of the headings of the thirteen chapters: sterilization; common culture-apparatus; culture media and their introduction into test-tubes, flasks, etc.; pure material for cultures; inoculating cultures; brood-ovens and thermo-regulators; bacteriological analysis of fluid, solid and gaseous substances, especially of water, the soil, and air; culture of anaërobic bacteria; cultivating micro-organisms under the microscope; inoculation of animals; cultures from man and animals; collecting and preparing primarily sterile culture-media; disinfection experiments; microscopic examination, and staining of bacteria.

The work of the translator has, in general, been well done. The occasional notes added by him are useful, especially so the one on pp. 586–7 relating to the rapid staining of tubercle bacilli. There are, however, some typographical errors which occasionally disturb the sense, as on page 476, where, by a misplacement of "first" and "second," the anthrax bacillus is made to appear as anaërobic and the bacillus of malignant œdema as aërobic. There are several errors in the spelling of proper names such as Botton for Bolton, p. 503; Siborius for Liborius, p. 521; Buckner for Buchner, p. 531 and elsewhere; Schauze for Schanze, p. 590. It is to be hoped that another edition may be called for in which these errors, which are not, however, numerous, may be corrected, and in which the work may be enabled to retain its position abreast with the rapid developments of bacteriological technology.

W. H. W.

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